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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,198	02/26/2002	Eyal Krupka	10559-654001/P13018	8485
20985	7590	07/22/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081				AGHDAM, FRESHTEH N
ART UNIT		PAPER NUMBER		
		2631		

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/086,198	KRUPKA, EYAL
	Examiner Freshteh N. Aghdam	Art Unit 2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 26 February 2002.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-6,8,10-15,17,19-24 and 26 is/are rejected.
- 7) Claim(s) 7,9,16,18,25 and 27 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 26 February 2002 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 6, 8, 10, 12, 15, 17, 19, 21, 24, and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al (US 2003/0118094).

As to claims 1, 10, and 19, Wang teaches initializing the parameters of a channel tap model; using one or more sets of channel taps to estimate a received data stream (i.e signal  $y(n)$ ); calculating one or more sets of adaptively updated channel taps responsive to the estimation of the received data stream; and fitting the one or more sets of adaptively updated channel taps to update the parameters of the channel tap model (i.e. applying a LMS algorithm to fit the time or frequency domain equalizer (Fig. 5 and 6; Pg. 1, Par. 14; Pg. 3, Par. 40, 45, 51, and 52).

As to claims 3, 12, and 21, Wang teaches running a LMS algorithm to calculate the one or more sets of adaptively updated channel taps from the one or more estimated symbols (Pg. 2, Par. 15; Pg. 3, Par. 51).

As to claims 6, 15, and 24, Wang teaches iteratively determining the parameters of the channel tap model; and initializing the parameters of the channel tap model used in each iteration with the parameters determined in a previous iteration by filtering the one or more sets of adaptively updated channel taps determined in the previous iteration (Pg. 3, Par. 51).

As to claims 8, 17, and 26, Wang teaches terminating the iterative method until a predetermined condition has been met (Pg. 3, Par. 40).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 11, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al, and further in view of Belotserkovsky et al (US 2002/0021750).

As to claims 2, 11, and 20, Wang teaches all the subject matters claimed above, except for obtaining a first set of channel taps from an input data stream containing a training data stream and a locally generated copy of the training data stream; and initializing the parameters of the channel tap model with the first set of channel taps. Belotserkovsky, in the same field of endeavor, teaches obtaining a first set of channel taps from an input data stream containing a training data stream and a locally generated

copy of the training data stream; and initializing the parameters of the channel tap model with the first set of channel taps (Fig. 2, Blocks 54, 58, and 64). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Belotserkovsky with Wang in order to initialize the channel taps for starting the iterations.

Claims 4, 5, 13, 14, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al, and further in view of Vaananen (US 2003/0091111).

As to claims 4, 5, 13, 14, 22, and 23, Wang teaches all the subject matter claimed above, except for fitting the one or more sets of adaptively updated channel taps to a channel tap model that is linear in time. The use of linear equalizers is well known in the art as evidenced by Vaananen. Vaananen, in the same field of endeavor, teaches an adaptive equalizer in a receiver that is linear in time (Fig. 2, Pg. 2, Par. 20; Pg. 4, Par. 52). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Vaananen with Wang in order to reduce strong intersymbol interference to a low-level signal power (Abstract).

#### ***Allowable Subject Matter***

Claims 7, 9, 16, 18, 25, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2631

As to claims 7, 16, and 25, the prior art of record fails to teach using the channel tap model to estimate progressively larger numbers of symbols in subsequent iterations of the method.

As to claims 9, 18, and 27, the prior art of record fails to teach terminating the iterative method when a predetermined number of iterations have been executed.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ishizu et al (US 5,475,710) see fig. 1, 13, and 15; Gu et al (US 6,421,380) see fig. 1-3; and Meyer et al (US 6,002,716) see fig. 1-3, linear model.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Freshteh Aghdam  
July 17, 2005

  
KEVIN BURD  
PRIMARY EXAMINER